

Air Pollution Knows No Bounds

Reducing Smog Regionally



New Jersey Clean Air Council Public Hearing April 14, 2015

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[†]**NOTE:** Speakers have either provided their own testimony summary, or have agreed to allow their testimony to be summarized by Clean Air Council staff.

I. EXECUTIVE SUMMARY

New Jersey has come into attainment with the United States Environmental Protection Agency's (USEPA's) National Ambient Air Quality Standards (NAAQS) for all criteria pollutants other than ozone. Ozone, commonly known as "smog," is a pollutant not directly emitted from a pollution source, but, rather, is chemically formed in a reaction between emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. These ozone precursor pollutants can be carried through the air hundreds of miles away from where originally emitted, adversely affecting the air quality in downwind states in a process known as interstate transport. Accordingly, controlling the emissions and coming into attainment with the ozone NAAQS requires not only reduction measures from sources within the State, but also regionally, including the Midwest and South. Hence, the collaboration of neighboring states is needed to adequately address ozone transport.

In order to obtain a better understanding of the formation and transport of ozone, the CAC selected "Air Pollution Knows No Bounds, Reducing Smog Regionally" as the topic for this year's public hearing. Through testimony presented at this hearing, the CAC was better able to identify and locate the various sources emitting ozone precursors and to identify existing and new strategies that can be implemented both locally, across the Ozone Transport Region (OTR), and beyond. Controlling ozone in our outdoor air will lead to a cleaner, healthier environment for the residents in and around New Jersey, as measured by the attainment of the health-based NAAQS for ozone.

Specifically, the Council identified the need for USEPA to hold states that interfere with the maintenance or attainment of the ozone NAAQS in neighboring states accountable. This goal can be accomplished through use of the section 110 (a)(2)(D) "good neighbor" provision of the Federal Clean Air Act (CAA), ensuring that adequate measures to address ozone transport be incorporated in all state implementation plans (SIPs). In this manner, New Jersey and other downwind states can achieve the NAAQS and, regionally, the various states will be on a more level economic playing field. If necessary, the USEPA should use its "backstop" authority to impose federal implementation plans (FIPs) that impose necessary control measures upon the recalcitrant.

There is a compelling need for USEPA to address loopholes that exist in the current regulatory scheme, whereby sources use emission allowances, rather than operate *existing* control equipment. It is no secret that the low cost of NO_x allowances, compared to the cost operating control equipment, promotes the turning off of these controls by source operators. This is a particularly pernicious outcome during periods of high ozone concentrations.

Mobile source emissions, although small in comparison to stationary sources on a unit-by-unit basis, are now the largest source of NO_x emissions within the State. This result is due to the number of vehicles and the increasing number of miles driven within the State each and every day, which contribute to the ozone problem in New Jersey and in neighboring downwind states. New Jersey should continue incentivizing the sales and use of alternative fuel vehicles (AFVs) and zero emission vehicles (ZEVs). New Jersey should continue to follow California's lead in mobile source reduction strategies and also implement appropriate recommendations from the Multi-State ZEV Action Plan. New Jersey should promote the operation of green fleets within the State, while continuing to prioritize diversification of our transportation infrastructure over updating or

growing existing roadways. This strategy would result in an over-all greener transportation system. New Jersey should promote retirement of older vehicles to enhance fleet turnover to cleaner, more efficient vehicles.

There is also a continued need for regional cooperation among states to work more collaboratively with one another on ozone-related issues. This goal can be accomplished through coordinated regulation and Title V permit reviews, including requirements for the operation of control technologies. Regional agencies should continue to share research, monitoring trends, and emissions modeling to develop various strategies that can be used for reducing emissions. This sharing is useful in the identification and the control of emissions from one state to another.

Over the past decades, New Jersey has demonstrated leadership in identifying and implementing measures to reduce ozone pollution. By continuing this leadership – aggressively seeking further reductions in ozone precursor emissions – we act as good neighbors to downwind states and continue to occupy the moral high ground that provides the equitable basis for our demand that all upwind states, with or without the participation of USEPA, further implement all practicable measures for further emission reductions. Since moral persuasion may not always yield the necessary, intended results, New Jersey should continue to vigorously pursue litigation, with like-minded other states and/or non-governmental organizations (NGOs) against upwind states, as appropriate, to advance the control of ozone and its precursors. The USEPA should be encouraged to join us, but where USEPA is the obstacle to our goals, legal action against that agency may be indicated. By taking this action, we address the moral and economic imperative of advancing the health of all New Jersey residents, while leveling the economic playing field.

II. INTRODUCTION

The New Jersey Clean Air Council (CAC or Council) is a statutorily created advisory body that provides ongoing input and recommendations to the New Jersey Department of Environmental Protection (NJDEP) on air quality issues. The CAC conducts annual public hearings that highlight the most pressing air quality issues affecting New Jersey. After considering the testimony received at the April 14, 2015 hearing, the CAC has prepared this report for presentation to the Commissioner of Environmental Protection, and NJDEP will make the report available to the public. For 2015, we are pleased to present our report entitled, “Air Pollution Knows No Bounds: Reducing Smog Regionally”.

New Jersey is a densely populated state located downwind from many other states where pollutant emissions from stationary, area, and mobile sources, including those causing smog (harmful ground-level ozone), are not optimally controlled. While NJDEP regulations do require such control from stationary and area sources under its jurisdiction, these out of state sources continue to emit air contaminants that affect this State and states downwind. Reductions in emissions of ozone precursors from these sources are necessary to achieve cleaner, healthier air. Air pollutants can travel with the wind over long distances, creating air quality problems far downwind of pollution sources. This movement of pollutants over long distances is known as interstate transport. The goal of the 2015 Clean Air Council public hearing, including its roundtable discussion, was to identify and better understand the issues related to controlling the

emission of ozone precursors, the formation of ozone, and the transport of these precursors and resultant ozone as a basis for formulating action recommendations for the Commissioner of Environmental Protection.

III. OVERVIEW

As a State with major industrial and commercial enterprises and dense development in a relatively small area, New Jersey has faced significant air quality challenges for many years. Air pollution in New Jersey comes from many different sources: stationary sources, such as factories and power plants; mobile sources, including both on- and off-road vehicles (including agricultural operations); area sources, such as consumer products and services (e.g., dry cleaners); naturally occurring sources such as vegetation and windblown dust; as well as other pollutants that drift on prevailing winds from other states. Air pollution is a serious environmental health problem that affects every resident. While we have made tremendous strides in lowering air pollution, New Jersey continues to exceed the health-based standards for ozone, as set by the United States Environmental Protection Agency (USEPA). Much of our progress towards improved air quality has been due to the significant improvements mandated by the Federal Clean Air Act (CAA), enacted over 40 years ago, and the New Jersey Air Pollution Control Act (APCA) enacted over 60 years ago, coupled with New Jersey's progressive position on environmental protection as a whole. Even so, thousands of our residents suffer from asthma, chronic obstructive pulmonary disease (COPD), and other respiratory conditions that are exacerbated by exposure to these pollutants in our air. Others are hospitalized or die from respiratory disease and heart attacks attributable to these pollutants. Recent evidence also suggests that ozone and its precursors have been shown to modify the potency of allergic reactions, especially for individuals living or working in and around urbanized areas where these pollutants can sometimes be released or chemically formed in larger quantities.

Electricity generation from fossil fuel sources, both in New Jersey and upwind states, results in significant levels of air pollution, including emissions of particulate matter and precursors to ground-level ozone. The effects of these energy generation-linked emissions directly and negatively impact human health and welfare. While New Jersey has been successful in significantly reducing emissions from these sources locally, out-of-state emissions continue to contribute significantly to air pollution in New Jersey. The region's air quality, while greatly improved over the last three decades, continues to rank among the most polluted in the nation. It is clear that more needs to be done to address air-pollution emissions in New Jersey both locally, within the State, and regionally, from a multi-state initiative, as "air pollution knows no bounds."

In the past 40 years, New Jersey made significant progress toward reducing ambient air pollution. However, scientific evidence indicates that additional reductions in ambient air pollution are necessary to protect the health of those who live and work in New Jersey. Scientists and economists are now working together to study air pollution on a regional level, in addition to focusing on local emission sources.

The recommendations below for mitigating the public's exposure to pollutants take into account:

1. Identification of stationary sources of emissions (NO_x, VOCs, PM, CO, SO₂ and air toxics), and their use/disuse of emission controls;
2. Identification of mobile source emissions and their relationship to and impact upon human health and environmental quality.
3. Identification of spatial and temporal pollutant emission patterns from upwind states and to states downwind from New Jersey;
4. Identification of mechanism(s) of ozone formation and transport aloft.

While much of the focus of the ozone transport issue discussed herein lies with power plant emissions, it should not be forgotten that mobile sources contribute 50% of New Jersey's ozone, 30% of New Jersey's fine particulate matter, and approximately 47% of New Jersey's greenhouse gas inventory, making them the largest contributor to our State's air pollution health risks. Although State Government has several ongoing efforts to reduce emissions from mobile sources, additional future strategies for implementation at local, regional, and national levels will be needed.

Because of federal preemption under the CAA, states, including New Jersey, may have somewhat limited options for reducing mobile source emissions. However, where not preempted, New Jersey has initiated several reduction strategies to reduce emissions from this sector. Since January 2004, the New Jersey Clean Car Program (N.J.S.A. 26:2C-8.15 et seq.) has required that NJDEP follow rules developed under the California Low Emission Vehicle (LEV) program to reduce criteria pollutant and greenhouse gas emissions from motor vehicles throughout the State. As of the 2009 vehicle model year, all new vehicles delivered for sale in New Jersey have met the more stringent California emission standards. In addition, manufacturers have been required to offer for sale a mix of zero, or partial zero, emission vehicles in New Jersey or use credits from early introduction of such vehicles. New Jersey has also implemented diesel retrofit programs which reduce the amount of diesel exhaust particulates emitted from on- and off-road diesel-powered vehicles. The anti-idling rule limits the amount of time gasoline and diesel engines can operate at a stand-still. The Ports Authority of New York and New Jersey can also contribute to reducing emissions through implementation of the Clean Air Strategy, a set of initiatives developed to help reduce emissions of nitrogen oxides, sulfur dioxides, small particulates, and green-house gases (GHGs) by retrofitting and replacing older, dirtier engines that assist in movement and handling of material/cargo within and out of the ports. Clearly, the transparent development and implementation of these and other measures are needed. However, in order to make a significant, positive impact on the health of the communities near the Port, the Authority needs to do much more to reduce port-related emissions.

Table 1 in Appendix I., adapted from the December 2014 Ozone Transport Commission (OTC) Mobile Emission Reduction Efforts report, shows the type of emission control programs used for select mobile sources from states (and the District of Columbia) in the Northeast OTR both upwind and downwind from New Jersey. It can be seen that the mobile source impacts from states upwind from New Jersey include cars/light trucks, heavy duty trucks, idling non-road vehicles, sailing vessels, rail equipment, and lack of "clean contracting" equipment.

IV. RECOMMENDATIONS

Based upon testimony received and discussion by the Council, we set forth the following recommendations for the Commissioner of Environmental Protection. Because we recognize that ozone transport is not a New Jersey-specific issue, but a multi-state and regional problem, we believe NJDEP must work closely with many stakeholders to fully realize the benefits from the emission reduction strategies outlined below. Additionally, the Council recognizes that while the State is experiencing difficult fiscal times and certain recommendations may not be actionable at this time, we felt it worthy to include them because their implementation remains highly cost-effective from an air pollution control perspective.

A. Recommendations for Stakeholder Partnerships

In an effort to identify, address, and remediate transient and local pollutant sources, a “stewardship approach” must be undertaken to involve a variety of local and regional stewards (stakeholders) in State and local government and the small business sector. Since many pollutants cannot be specifically tied to one industry or one emitter, it takes more than one entity to identify/reduce/monitor this pollution, determine the best emission control technology alternatives, and examine environmental and health impacts from exposure to the pollutant or pollutant class. The CAC acknowledges that the recommendations outlined below can only be implemented with cooperation by the following stewards (listed with some examples of their responsibilities):

1. State Departments of Environmental Protection (throughout the region) – identifying source(s), monitoring emissions, monitoring weather patterns associated with greatest pollutant deposition, expanded enforcement efforts, proposing remedial legislation, developing and implementing appropriate new policies and regulatory changes;
2. State Departments of Health (throughout the region) – understanding relationships between pollutant exposure and health outcome; identifying specific adverse health outcomes to susceptible populations;
3. Academic institutions – determining relationships between pollutants and health; applying new knowledge to State and regional pollution problems; technical assistance with data collection, analysis, and modeling;
4. Plant operators – optimal operation of installed reasonably available control technology (RACT), best available control technology (BACT), and/or maximum achievable control technology (MACT), as applicable, at all times, equipment maintenance and retrofitting, examination of “green” alternatives;
5. Environmental Justice/ environmental organizations – empowering communities by providing organizing and technical assistance; helping to educate communities, government, and business about pollutant sources and their effects on public health; helping to develop appropriate new policies to address emission sources.

B. Specific Recommendations

I. Stationary Source Recommendations

1. NJDEP must incorporate “Good Neighbor” provisions in all SIPs, and major source permit approvals should be consistent with these “Good Neighbor” provisions.
 - a) Ensure downwind state environmental agency review of each New Jersey major source permit application to determine if its requirements are in line with regional pollution reduction initiatives. Ensure upwind state environmental agencies provide NJDEP the meaningful opportunity to review major source permit applications where the target source is located in a state significantly contributing to nonattainment with the ozone NAAQS in New Jersey.
 - b) Presently, regional and photochemical air quality impact assessment methods are highly complex and still evolving, so much so that they are not available or commonly used for individual projects. Having streamlined, practical and accurate tools for this purpose would help the applicants demonstrate the acceptability of their proposed projects.
 - c) Continue to pressure the USEPA to ensure emission sources in upwind states run their installed emission control systems at design levels and continuously, particularly when conditions arise leading to high ozone days downwind. While the USEPA needs to continue to hold emission sources legally liable to fully comply with the CAA, it also needs to develop further legal requirements to ensure greater actual operation of existing emission controls, rather than the use of allowances, whenever emissions are likely to occur, e.g., mandate such operation use RACT in both attainment and non-attainment areas and in the “good neighbor” provisions of SIP revisions submitted for USEPA approval.
 - d) Pressure USEPA to adopt nationwide *de minimis* criteria, including the aforementioned continuous operation of permitted emission control systems, for RACT. Permanent and enforceable measures should limit or eliminate emissions of ozone-forming precursors.
2. NJDEP should work with USEPA and OTR states to develop a “high ozone day” cost-benefit metric to evaluate control strategy costs during the period of greatest threat to health and welfare. NJDEP should follow up with use of this metric in the development and implementation of future ozone control requirements.
3. Because there is evidence that on high ozone days emission rates in the Northeast can more than double the average monthly rate, NJDEP should reexamine air quality evaluation and modeling techniques currently used within the State and region to determine that they take into account peak operating conditions, e.g., operation on high electric demand days (HEDDs), that may drive NAAQS non-attainment.

4. Because current research suggests that there may be significant adverse health effects from ozone exposure down to levels lower than the current standard, NJDEP should advocate that all states within the OTR pursue major source emission reductions that are as least as effective as currently required in New Jersey.
 - a. Emitters could be incentivized to replace or retrofit older equipment with state of the art air pollution control measures to better control VOCs that are also hazardous air pollutants (HAPs);
 - b. Emitters could be encouraged to modify processes, methods, systems or techniques that are used so as to further limit the emissions of air pollutants, including NO_x and HAPs.
5. The NJDEP should request that USEPA conduct a 5-year periodic review to determine the best control technologies available for each emission source category. The USEPA should review new source performance standards (NSPS) every 5 years and MACT every 8 years.
6. New Jersey should consider entry into the 2013 CAA section 176A petition filed by eight states, which requests that USEPA add nine upwind states to the OTR, thereby making those states partners in developing OTC measures to reduce ozone transport and mandating that those states take additional measures to reduce their contribution to ozone transport adversely affecting downwind states, such as New Jersey. While not repeated below, this CAC recommendation is also applicable to mobile sources.

II. Mobile Source Recommendations

1. The NJDEP should continue to promote the purchase and use of alternative fuel vehicles (AFVs) and zero emission vehicles (ZEVs) within the State and OTR to reduce NO_x and ozone emissions from mobile sources, the largest contributor to pollution in New Jersey. Many of the specific recommendations within this section are similar to those contained in the Multi-State ZEV Action Plan, dated May 2014 (<http://www.nescaum.org/topics/zero-emission-vehicles>), so it is recommended that NJDEP continue to work with Northeast States for Coordinated Air Use Management (NESCAUM) and member States to implement the actions contained in that Action Plan.
 - a. Develop greater financial and operational incentives for both dealers/manufacturers to sell, and consumers to purchase, alternative fuel vehicles within New Jersey and consider working with neighboring states on a campaign promoting their use; expand the sales tax exemption for new and used zero emission vehicles, or at least a reduced sales tax, to new and used hybrid electric or natural gas vehicles;
 - b. Work with State toll road authorities to develop plans for reduced highway toll fees for any driver (resident drivers and non-resident drivers) when driving a registered alternative fuel vehicle utilizing EZ Pass[®];

- c. Consider grant/rebate programs to encourage electric vehicle (EV) car-sharing, e-bikes and scooters for low income residents and residents in communities of color;
 - d. Develop a new program to promote retirement of cars and/or trucks greater than 15 years of age;
 - e. Create incentives for companies with “green fleets” operating within the State or region;
 - f. Coordinate with other states to ensure the successful implementation of ZEV programs.
2. The NJDEP should continue to support policies that place a higher priority on diversifying New Jersey’s transportation infrastructure, rather than on roadway expansion or new roadway development. This encourages greater use of mass transit and transit-oriented housing and business development. Walkable communities result in more effective land use management by creating a better sense of community among residents, making access to healthy choices easier (e.g., walking and biking rather than driving) while reducing air pollution. Transit-oriented development (TOD), defined as mixed-use residential and commercial development that is designed to take advantage of public transportation access, is an important component of smart growth because it allows people to live, work and play without relying on personal automobiles. TOD also allows the State to grow in ways that take advantage of existing infrastructure and does not consume the State’s limited open space. Elements of good transit oriented development include:
- a. Pedestrian-friendly design, a mix of compatible uses, connectivity to the surrounding community and a mix of housing and commercial options;
 - b. Encouraging expansion of “complete streets” projects in more counties and municipalities, as well as state roadways;
 - c. Continuing to encourage creation and expansion of existing public health partnerships to promote healthy lifestyles (e.g., Safe Routes to School, Walking School Bus programs);
 - d. Encouraging the creation of worker van pools in each community and promoting the use of flex time in businesses to maximize use of van pools, ride shares, etc., as well as telecommuting whenever feasible;
 - e. Encouraging the use of car sharing services. Car-sharing has been shown to reduce the use of personally-owned vehicles. The car-sharing system offers several social benefits such as reduced emissions and less traffic. Several car-sharing companies have expanded their fleets to include electric vehicles.

3. In order to attain and maintain the NAAQS standards, the NJDEP should be a more outspoken advocate for the creation of incentives in New Jersey and the OTR region to provide greater support for public transit. NJDEP representatives should meet with the New Jersey Department of Transportation (NJDOT), to develop a coordinated effort which includes both efforts to reduce mobile source emissions and incentivizing mass transit.

III. Research and Collaboration Recommendations

1. NJDEP should develop more partnerships with colleges and universities throughout New Jersey, and elsewhere as appropriate, to expand ozone monitoring and research efforts across the State to utilize resources which include: airplanes, balloons, light detection and ranging (LIDAR) technology, profilers, etc.
 - a. Seek guidance from Maryland Department of the Environment and the University of Maryland, which already partner to collect and analyze ozone data using these tools, to determine how best to seek funding for this type of expanded monitoring and how best to develop these programs;
 - b. Develop a community of practice among neighboring states within the OTR to determine what gaps still exist in understanding regional ozone transport issues and the elevated reservoir of ozone and its precursors and how to share existing resources (technological and financial) to address these issues. This community of practice would determine best potential funding sources for expansion of monitoring efforts (e.g., establishing a not-for-profit, industry-funded 501-(c)(3) organization). This community of practice would examine research gaps which include:
 - i. Better determination of benefits of super-regional (i.e., beyond the current OTR boundary) NO_x reductions;
 - ii. Determination of the speed by which ozone (O₃) precursor pollutants make ozone;
 - iii. Understanding the degree to which southerly ozone transport from the nocturnal low-level jet impacts New Jersey;
 - iv. Improvement in emissions estimates provided by the MOVES model;
 - v. The effects that land-water interfaces have on ozone.
2. The NJDEP should continue to provide adequate resources to support and enhance New Jersey's participation in regional and national air quality planning activities (e.g., OTC, NESCAUM, Mid-Atlantic Regional Air Management Association (MARAMA), Mid-Atlantic/Northeast Visibility Union (MANE-VU), etc.).

3. Since mobile source emissions are a major issue requiring more attention than has been given in the past and the CAC recognizes its lack of relevant expertise to help provide advice and guidance, the Council recommends that the Commissioner of Environmental Protection assist in requesting and securing the presence of content experts to attend CAC meetings and the public hearing, as needed, during the development of its recommendations for the Commissioner of DEP. These content experts would come from State agencies (e.g., NJDOT, New Jersey Motor Vehicle Commission (NJMVC)) and be present for a duration determined by the Council.
4. Because ozone transport is a regional problem, New Jersey should increase its collaborative efforts with other middle-Atlantic and northeastern states to advance standardized, region-wide development and implementation of emissions control and reduction measures through the OTC and encourage federal adoption of such measures.
 - a. NJDEP should encourage other states in the OTR to pressure USEPA to level the economic playing field by requiring a fairer distribution among the states of the burdens of controlling ozone;
 - b. NJDEP should confer with the Division of Law to determine areas of potentially productive legal measures, including litigation, with attorneys general from other states and staff attorneys from NGOs sharing common interests to reduce ozone transport into New Jersey from upwind states.

V. SUMMARY OF TESTIMONY

(Note: Summaries are listed in order of speaker testimony.)

USEPA Perspectives on Interstate Ozone Transport

Richard Ruvo, Chief, Air Programs Branch, U.S. Environmental Protection Agency Region II

Section 110(a)(2)(D) of the Clean Air Act, also known as the “Good Neighbor” provision, says that no State Implementation Plan (SIP) should significantly contribute towards or adversely affect another state’s nonattainment or maintenance of any NAAQS to a downwind state. USEPA will carry out a “Backstop” role, if necessary, to assure that states sufficiently address transport issues and state requirements within their SIPs in a timely manner. The Cross State Pollution Rule (CSAPR) was enacted to control ozone and fine particulate emissions from power plants across the United States, so that states with controls should be required to operate them. USEPA’s Tier 3 requirements, beginning in 2017, will lower the sulfur content of gasoline for vehicles, making their emissions control systems more efficient. USEPA is also updating their modeling efforts to show what each state’s contributions to neighboring downwind states are so that states reduction measures could be implemented. Using modeling efforts to identify air quality problems, showing which states contribute emissions downwind to neighboring states along with implementing the emissions reduction plans mentioned while enforcing these plans,

USEPA anticipates addressing these transport issues so that states can meet the 2008 75 ppb ozone attainment standard.

- Good neighbor provisions should be used in CSAPR and SIPs;
- Ozone attainment date is July 2018. States need to demonstrate the ability to meet the standard by July 2017;
- Facilities with installed controls need to run them. This presents an opportune time period to get companies to run this equipment to see how this can reduce NO_x emissions;
- There should be a backstop plan for any states that do not submit a good neighbor SIP;
- USEPA is updating models showing which states are contributing to transport and this will be available to states;
- USEPA is using a 4-step process to address transport;
- We need to adopt a permanent and enforceable measure to limit/eliminate transport.

Transport and production of secondary pollutants in New Jersey

Annmari G. Carlton, Ph.D., P.E., Assistant Professor, Atmospheric Chemistry, Department of Environmental Sciences, Rutgers University

Ozone, found in the upper atmosphere, is good for us as it helps to block the harmful ultra violet (UV) rays of the sun, however, ground level ozone, or smog, is dangerous for both humans and the environment. Ozone is a reactive molecule that can have adverse health effects on humans especially the very young, old, or anyone with breathing complications. Ozone is formed in the atmosphere in the presence of sunlight, in a chemical reaction between VOCs and NO_x. These pollutants, or precursors to ozone formation, are emitted into the atmosphere each and every day from chemicals, trees, factories, and combustion sources including the electric generating units (EGU). With this year's topic concentrating on the transport of ozone, it is important to understand the chemistry behind its formation. In an environment rich in VOCs, say in a rural area, ozone formation might be considered NO_x limited, meaning that the potential for ozone formation is limited by the smaller amount of NO_x in the atmosphere compared to the larger amounts of VOC available for ozone formation, while the same can be said for urban areas, where there might be greater amounts of NO_x available for ozone formation with a limited amount of VOCs, being VOC limited. Measuring just the amount of ozone in one area might be misleading as the complete reaction might be limited, and so emission reduction strategies must take this chemical reaction balance as well as the VOC's reactivity in creating ozone into consideration when implementing control measures. Temperature and wind flow also play key roles in ozone formation. Since ozone is formed in the presence of sunlight and heat, its formation is greater during the summer months versus the winter months, and in areas where released VOC and NO_x emissions remain stagnant in one area, levels of ozone can become dangerous. This is why it is important to understand the chemistry of ozone formation when operating control measures. Keep in mind that ozone and its precursors can also be transported over large areas having the ability to form higher concentrations of ozone in certain areas if not properly controlled, (alluding to the fact that ozone transport and the control of its formation needs to be a regional effort.)

- Negative impact of expanding ozone season to our blueberry agriculture

- Mobile sources and EGUs are the major factors
- Plants, especially trees, are the largest source of VOCs
- Mobile source VOC and NO_x are the major contributors to ozone formation and transport
- Specific areas are either NO_x-limited or VOC-limited
- Must pay attention to times of day and day of week
- Much pollution results during heat wave stagnation events

Ozone Attainment Issues in Light of Transport Across the Eastern US

Paul Lioy, Ph.D., Deputy Director for Government Relations, Environmental and Occupational Health Sciences Institute (EOHSI)

- Ozone is an air pollutant which is formed in the atmosphere that cannot be ignored – causes health effects, and because it is an oxidant it leads to the formation of other products, including secondary particles, that can affect human health
- The bulk of measured ozone is formed after the oxidation of nitrogen oxides and highly reactive organic compounds.
- Ozone and ozone precursors can travel hundreds of miles that make it a regional and well as a local air pollution issue.
- Formation, accumulation and transport is a non-linear processes, and control strategies must take these into account in the design and implementation of control strategies
- The GOOD news is that ozone has been decreasing steadily since the early 1980s which indicates that strategies to date have been effective
- Large uncertainty for NJ is the change in number of vehicular miles driven each year both in NJ and other states east of the Mississippi River

Update on the Science of Ozone Health Effects

Robert Laumbach, M.D., MPH, CIH, Associate Professor of Environmental and Occupational Medicine, Clinical Research and Occupational Medicine Division, Environmental and Occupational Health Sciences Institute, Robert Wood Johnson Medical School Environmental and Occupational Health Sciences Institute (EOHSI)

Recent research suggests that there may be significant adverse health effects of ozone down to background atmospheric concentrations. Studies of the effects of short-term exposure to ozone on all-cause mortality, respiratory morbidity, and decrease in lung function suggest that there may be no practical threshold level of exposure below which ozone does not cause adverse health effects. Studies of long-term effects of exposure to ozone have shown diminished lung growth and higher incidence of asthma with increased exposure to ozone. From a health point of view, the best available evidence indicates that large benefits can be achieved by continued reductions in tropospheric ozone pollution.

NJDEP Welcoming Statement

Bob Martin, Commissioner, NJDEP

New Jersey has shown that clean air is possible. With the help of various organizations, citizens and the researchers who are committed to clean, healthy air, New Jersey has made great strides in reducing air pollution since the first Earth Day more than 45 years ago. New Jersey now meets every federally regulated ambient air quality pollutant standard, except for ozone. The power sector, businesses and the people of New Jersey have done their part in cleaning the air, but because neighboring states have not done the same, New Jersey is not on a level playing field.

New Jersey recently attained the federal health standards for fine particulates. Air pollution controls for sulfur dioxide emissions and requiring low-sulfur fuel contributed to reduced particles in the air. Nitrogen oxidizes, or NO_x, emissions from power plants have also become increasingly cleaner. New Jersey approved five new gas-fired electric generating facilities that operate with state-of-the-art emissions controls. These plants replace much higher emitting electric generating capacity, including several coal-fired plants in New Jersey. With attention being focused on the impending summer months and high ozone days, New Jersey is in its second phase of the High Electric Demand Day (HEDD) rule, which reduces emissions from peak electric demand units by controlling or shutting down and replacing older, dirtier electric generating units. New Jersey also supports bringing more combined heat and power (CHP) facilities online.

In addition to emissions reductions to the power sector, New Jersey has lowered the sulfur content of home heating fuel from up to 3,000 parts per million (ppm) to 500 ppm in 2014, and eventually to 15 ppm in 2016, while residual fuel oil has decreased from 20,000 ppm to a range of 3,000-5,000 ppm. New Jersey's Diesel Retrofit Law has reduced over 140 tons per year of particulates through the installation of modern emissions controls on existing diesel equipment.

New Jersey is ranked 3rd in total installed solar capacity and 2nd in the nation for net-metered capacity. Clean renewable energy is also an important part of our clean air efforts. With regards to electric vehicles, New Jersey is exploring recognition programs and financial incentives for employers to install electric charging stations throughout the state. Just last month, NJDEP launched CleanAirNJ, which is an outreach program designed to educate residents in reducing pollution, including ozone, in our everyday lives.

To complement all of the measures New Jersey has taken to reduce emissions, neighboring states need to step up and reduce their own emissions. New Jersey requires NO_x pollution controls be up to date for all coal-, oil- and gas-fired units. However, neighboring states like Pennsylvania do not.

Some coal-fired power plants in Pennsylvania that have NO_x controls are not operating them. The USEPA and Pennsylvania allow these coal plants to turn off their NO_x controls by purchasing NO_x allowances through USEPA's interstate trading rule. And yes, it is currently legal for these NO_x controls to remain off, even though their emissions have been shown to significantly contribute to the poor ozone air quality in New Jersey, New York and Connecticut.

New Jersey has the option to take legal action, but we believe that the federal government should be doing more to get these neighboring states to do their fair share of emissions control, so that states regionally can all be on the same playing field.

USEPA is simply not doing its job properly to address ozone transport from upwind states that contribute to the New Jersey's non-attainment. With the delayed implementation of the current ozone standard, USEPA failed to hold upwind states legally accountable for their significant contributions to nearby states. With the inefficiency of the CSAPR, ozone transport from neighboring states is a serious problem. Transport needs to be addressed if New Jersey is to come into attainment for the current ozone standard. Northern New Jersey's monitors are in attainment with the current ozone standard, but regionally, we share an area with New York and Connecticut that is in non-attainment.

Here is another reason why it is important to deal with ozone transport regionally. Economically, it is more expensive to locate, operate and expand a business here in New Jersey. New Jersey has done a tremendous job in controlling emissions within the state, and so now we must think and act regionally, sharing the responsibility of controlling emissions with neighboring upwind states, to bring the region into attainment.

New Jersey has well controlled VOC and NO_x emissions from stationary sources within the state. The second part of ozone transport is that hundreds of thousands of vehicles travel within and throughout our state each and every day. Some are not registered in or subject to the same standards for vehicles that New Jersey maintains. And although USEPA continues tightening the emissions standards for vehicles, solving the ozone transport issue needs regional efforts from both upwind and downwind states.

New Jersey has done a great job in reducing emissions within the state, including the private, public and power sectors. However, New Jersey still needs to come into attainment for USEPA's current and likely future ozone standards. This is why today's topic is so important. Ozone is New Jersey's biggest air quality problem that still needs to be addressed, not only from within the state, but also regionally, as air pollution knows no bounds.

Regional Problems Demand Regional Solutions

Jocelyn D'Ambrosio, Sr. Associate Attorney, Earthjustice

Thank you for inviting me to present at this meeting and for the opportunity to talk about the need for collaborative approaches to addressing ozone pollution.

Ozone pollution is a big problem in this country, especially in the Northeast and New Jersey, thanks in large part because of emissions from power plants and motor vehicles. These sources emit pollutants, like volatile organic compounds and oxides of nitrogen, which react with sunlight to form ozone, which shrouds the air with a hazy curtain of air pollution. More than that, though, ozone pollution is dangerous for human health. It is linked to lung and heart disease, thousands of deaths each year, increasing incidence of asthma, and up to 1 million missed days of school each year.

Ozone pollution, thus, is a huge problem that demands our attention, not just at the state level, but at the regional level. The pollution that contributes to ozone travels across state lines. Thus, all of the states in this region must work together to reduce emissions from the major contributors to ozone pollution: power plants and vehicles.

As for power plants, although national programs will be important to reducing ozone pollution, states should not wait for a national program to begin making the transformative shift away from fossil-fuel fired energy needed to address ozone pollution. States across the country, and at least in the Northeast, should set stringent, unified standards to send a signal to the market that will drive investment in renewables and technologies to clean up the air pollution. As the number of states behind strong controls increase, so too do the economies of scale. Unified, regional standards also help ensure that industry will not move across state lines to obtain a license to pollute. The dynamics of grid planning also demand regional thinking. As we move toward renewable energy, ensuring a robust grid will require spreading renewable energy generation over a greater area. Having solar and wind sources feeding into the grid across many states will increase the chances that at a given time of day the sun will be shining or the wind will be blowing.

While power plants have been a focus in the efforts to address air pollution, mobile sources are becoming increasingly important. The federal government is in the process of tightening the ozone standard and, under any of the proposed standards, ensuring reductions from mobile sources will have to be a big part of the equation. Here, too, though rather than waiting for those standards to go into effect, states within our region should begin to tighten limits on mobile sources, opting into California standards and pushing the USEPA to adopt stronger standards for heavy duty diesel trucks.

The benefit of this regional collaboration will be many-fold. The future of our climate demands a transition away from fossil-fuel energy generation and tighter ozone controls will be an important driver of that transition. Burning fossil fuels leads to emissions of oxides of nitrogen, which contribute to ozone. Thus all the work at the state and regional level addressing ozone will not just clean up the air and make it safer for people to breathe, it also will help us achieve our climate goals, too.

Solving the Ozone Transport Problem – Some Thoughts from Your Neighbor to the South, Let Me Know What You Think ... Are We a “Good” or “Bad” Neighbor

George S. (Tad) Aburn, Jr., Director, Air & Radiation Management Administration, Maryland Department of the Environment

Mr. Aburn’s presentation focused on three topics:

1. The findings of Maryland’s research program with regard to ozone transport;
2. Maryland’s modeling work and its findings regarding what Maryland and New Jersey and other states need to do to help meet air quality standards;
3. Issues for the roundtable discussion.

Maryland's ozone research program involves partnership with a number of area universities and the use of a range of tools, such as balloons, LIDAR, satellites, profilers, modeling, and special monitors. The research has found an elevated ozone reservoir and three different types of transport that move it: westerly, night-time/southerly, and city-to-city. The points that the research highlights include the importance of continued local emissions controls as well as the centrality of emissions controls across a large region of the country and nationwide.

The modeling that Maryland has done offers insights into possible USEPA requirements of states to meet their SIP obligations for ozone. Some control programs that may help states meet these obligations include optimization of controls at EGUs, aftermarket catalyst programs, on- and off-road idling reductions, OTC VOC initiatives, the SmartWay® Affiliates program, and programs to reduce NO_x emissions from smaller combustion sources with high peak day NO_x emissions. Maryland included over 40 control programs in this modeling.

To conclude, Mr. Aburn expresses that it is critical for Maryland and New Jersey to continue to work as partners:

1. Insure that EGU controls in states upwind of Maryland and New Jersey minimize emissions in the summertime by optimizing installed control technology;
2. Adopt and implement the OTC Aftermarket Catalyst rule and the other eight OTC model programs;
3. Encourage other key states, such as Pennsylvania, to adopt the OTC model rules;
4. Urge USEPA to adopt three of the OTC rules as national rules: Aftermarket Catalyst, Architectural and Industrial Maintenance (AIM) Coatings and Consumer Products;
5. Urge USEPA to immediately begin to analyze and adopt new mobile source NO_x reduction programs. Attainment of a new ozone standard may be impossible without new federal mobile source NO_x reduction initiatives.

The Role of Interstate Transport of Air Pollutants in Achieving Ozone NAAQS Attainment
David M. Flannery, Steptoe & Johnson PLLC, representing Midwest Ozone Group (MOG)

States with non-attainment areas have the primary responsibility for attaining NAAQS. Upwind states may face additional emission reductions under Good Neighbor SIP requirements if:

- Residual nonattainment in downwind states;
- Downwind states responsible for NAAQS violations not attributable to upwind states;
- An upwind state is a significant contributor to remaining nonattainment (more than 1%);
- Upwind state requirements do not result in over-control or elimination of more than their own significant contribution.

Emission reduction data show that Midwest and Southeast states have achieved substantially larger reductions in emissions (1999-2011 and 2005-2011), than Northeast states. The USEPA's modeling indicates continued reduction in NO_x emissions as a result of promulgated regulations. Actual EGU NO_x emissions reported to the USEPA Clean Air Markets Division (CAMD) in 2012 are already significantly lower in upwind states (and marginally lower in downwind states)

than the estimates used in USEPA source apportionment modeling to determine significant contribution.

Data indicate that it is not EGU emissions from outside of Northeast that appear to contribute to high episode ozone concentrations within the Northeast. On multiple high ozone days in 2013 EGUs located in Northeastern states had NO_x emissions that were more than double their normal monthly emission rate.

Air quality is significantly improving in much of the Northeast making it unnecessary to impose additional controls. The significant reduction in emissions projected by USEPA to occur over the next several years will result in continued improvement in air quality throughout the OTR. Anticipated controls on Northeastern sources should be all that is needed to achieve attainment. Beyond efforts to achieve attainment of the 75 ppb NAAQS, the other major drivers of further reductions of ozone precursors are the possibility of a new transport rule, the prospects of a lower ozone NAAQS later this year and the outcome of the State Collaborative on Ozone Transport (SCOOT) process.

Please see Appendix II. for a more detailed analysis provided by Mr. Flannery.

Reducing Ozone Transport: A Shared Responsibility

Richard Pirolli, Director, Planning & Standards Division, Bureau of Air Management,
Connecticut Department of Energy and Environmental Protection

Connecticut is measuring the highest ozone levels in the Northeast and is not attaining the 2008 ozone National Ambient Air Quality Standard. We are also having difficulty maintaining the 1997 ozone standard and there is a proposed lower standard. Connecticut, southern New York and northern New Jersey are part of a common non-attainment area. This means over 22 million citizens are breathing unhealthy air. As well as the public health costs and impacts, there are other significant costs associated with a designation of nonattainment. State environmental agencies face additional costs in developing, implementing and maintaining clean air programs to address nonattainment. Industry bears the cost of installing expensive control technologies and purchasing emissions offsets that can add millions of dollars to projects at new or existing facilities. This increases the cost of doing business and makes states with nonattainment areas unattractive to locate in and do business. Upwind states, most of which are in attainment and do not bear such costs, contribute over 90% of the ozone levels measured at Connecticut's monitors. On this uneven playing field, the attainment fate of New York, New Jersey, and Connecticut lies squarely in the hands of its upwind neighbors and the USEPA.

The Connecticut Department of Energy and Environmental Protection recommends that New Jersey:

- Continue to evaluate and implement control strategies to reduce NO_x emissions on high electric demand days;
- Reduce energy demand by investing in renewable energy and energy efficiency programs;

- Evaluate and implement NO_x and VOC emissions control strategies associated with ports;
- Evaluate and identify emission reduction opportunities in the off-road source sector;
- Implement OTC mobile source control strategies such as SmartWay[®] and the Aftermarket Catalyst model rule;
- Continue to implement reasonable control technologies and measures on stationary sources.

Additional RACT Requirements for Major Sources of NO_x and VOCs in Pennsylvania – Advocates' Perspective

Ryan Knapick, Esq., Regulatory Counsel, Clean Air Council of the Delaware Valley

Clean Air Council (Philadelphia), in coordination with Sierra Club and Earthjustice, recently challenged the Pennsylvania Department of Environmental Protection and its proposed RACT requirements for major sources of nitrogen oxides and volatile organic compounds. In addition to faulting Pennsylvania Department of Environmental Protection (PADEP) for failing to establish an appropriate RACT requirement for coal-fired EGUs, Clean Air Council (Philadelphia), USEPA, and NJDEP all submitted comments that urged Pennsylvania (among numerous other recommendations) to require affected facilities to operate proper emission controls during the ozone season, as opposed to when it is economically advantageous to industry stakeholders. This will be significant not only for Pennsylvania's efforts to implement its ozone standard attainment and maintenance strategies, but also for similar efforts by downwind states, including New Jersey. Additionally, throughout the Pennsylvania RACT rulemaking process, it has become clear that effective communication between environmental advocacy groups and regulatory bodies is a critical component of regulatory agenda setting and execution, particularly where multiple interests are involved. Thus, it should be noted that cooperative efforts between environmental NGO's and regulatory bodies are often overlooked yet important tools in those efforts.

VI. LIST OF ACRONYMS

AFV	-	Alternative Fuel Vehicle
APCA	-	Air Pollution Control Act (New Jersey)
BACT	-	Best Available Control Technology
CAA	-	Federal Clean Air Act
CAC	-	Clean Air Council
CAMD	-	Clean Air Markets Division (of the USEPA)
CHP	-	Combined Heat and Power
CO	-	Carbon Monoxide
COPD	-	Chronic Obstructive Pulmonary Disease
CSAPR	-	Cross-State Air Pollution Rule
EGU	-	Electricity Generation Unit
EV	-	Electric Vehicle
FIPS	-	Federal Implementation Plan
GHG	-	Greenhouse Gas
HAP	-	Hazardous Air Pollutant
HEDD	-	High Energy Demand Day(s)
LEV	-	Low Emission Vehicle
LIDAR	-	Light Detection and Ranging
MACT	-	Maximum Achievable Control Technology
MANE-VU	-	Mid-Atlantic/Northeast Visibility Union
MARAMA	-	Mid-Atlantic Regional Air Management Association
MOVES	-	Motor Vehicle Emissions Simulator (software)

NAAQS	-	National Ambient Air Quality Standards
NESCAUM	-	Northeast States for Coordinated Air Use Management
NJDEP	-	New Jersey Department of Environmental Protection
NJDOT	-	New Jersey Department of Transportation
NJMVC	-	New Jersey Motor Vehicle Commission
NO _x	-	Nitrogen Oxides
NGO	-	Non-Governmental Organization
NSPS	-	New Source Performance Standards
O ₃	-	Ozone
OTC	-	Ozone Transport Commission
OTR	-	Ozone Transport Region
PADEP	-	Pennsylvania Department of Environmental Protection
PM	-	Particulate Matter
ppb	-	Parts per Billion
ppm	-	Parts per Million
RACT	-	Reasonably Available Control Technology
SCOOT	-	State Collaborative on Ozone Transport
SIP	-	State Implementation Plan
SO ₂	-	Sulfur Dioxide
TOD	-	Transit-oriented Development
USEPA	-	United States Environmental Protection Agency
UV	-	Ultraviolet
VOC	-	Volatile Organic Compound

ZEV - Zero Emission Vehicle

VII. HISTORY OF THE CLEAN AIR COUNCIL ANNUAL REPORTS

- 2014 Reducing Air Emissions Through Alternative Transportation Strategies
- 2013 Addressing the Adverse Effects of Climate Change on Air Quality
- 2012 Transportation and Small Sources of Air Pollution: Challenges and Opportunities to Achieve Healthier Air Quality in New Jersey
- 2011 The Cumulative Health Impacts of Toxic Air Pollutants on Sensitive subpopulations and the General Public
- 2010 Vision for the Next Decade: Air Quality and Pollution Control in New Jersey
- 2009 Electricity Generation Alternatives for New Jersey's Future: What is the Right Mix for Improving Air Quality and Reducing Climate Change?
- 2008 Improving Air Quality at Our Ports & Airports—Setting an Agenda for a Cleaner Future
- 2007 Improving Air Quality through Energy Efficiency and Conservation: The Power of Government Policy and an Educated Public
- 2006 Indoor Air Quality
- 2005 Air Pollution—Effects on Public Health, Health Care Costs, and Health Insurance Costs
- 2004 Fine Particulate Matter in the Atmosphere
 - Health Impacts in NJ • Need for Control Measures
- 2003 Moving Transportation in the Right Direction
- 2002 Innovative Solutions for Clean Air
- 2001 Air Quality Needs Beyond 2000
- 2000 Air Toxics in New Jersey
- 1999 The Impact of Electric Utility Deregulation on New Jersey's Environment
- 1998 CLEAN AIR Complying with the Clean Air Act: Status, Problems, Impacts, and Strategies
- 1997 Particulate Matter: The proposed Standard and How it May Affect NJ
- 1996 Clearing the Air Communicating with the Public

- 1995 Strategies for Meeting Clean Air Goals
- 1994 Air Pollution in NJ: State Appropriations vs. Fees & Fines
- 1993 Enhanced Automobile Inspection and Maintenance Procedures
- 1992 Impact on the Public of the New Clean Air Act Requirements
- 1991 Air Pollution Emergencies
- 1990 Trucks, Buses, and Cars: Emissions and Inspections
- 1989 Risk Assessment - The Future of Environmental Quality
- 1988 The Waste Crisis, Disposal Without Air Pollution
- 1987 Ozone: New Jersey's Health Dilemma
- 1986 Indoor Air Pollution
- 1985 Fifteen Years of Air Pollution Control in NJ: Unanswered Questions
- 1984 The Effects of Resource Recovery on Air Quality
- 1983 The Effects of Acid Rain in NJ
- 1981 How Can NJ Stimulate Car and Van Pooling to Improve Air Quality
- 1980 (October) Ride Sharing, Car- and Van-Pooling
- 1979 What Are the Roles of Municipal, County, and Regional Agencies in the New Jersey Air Pollution Program?
- 1978 How Can NJ meet its Energy Needs While Attaining and Maintaining Air Quality Standards?
- 1977 How Can NJ Grow While Attaining and Maintaining Air Quality Standards?
- 1976 Should NJ Change its Air Pollution Regulations?
- 1974 Photochemical Oxidants
- 1973 Clean Air and Transportation Alternatives to the Automobile and Will the Environmental Impact Statement Serve to Improve Air Quality in NJ?

- 1972 The Environmental Impact on Air Pollution: The Relationship between Air Quality, Public Health, and Economic Growth in NJ
- 1971 How Citizens of NJ Can Fight Air Pollution Most Effectively with Recommendations for Action
- 1970 Status of Air Pollution From Mobile Sources with Recommendations for Further Action
- 1969 Status of Air Pollution Control in NJ, with Recommendations for Further Actions

VIII. APPENDICIES

APPENDIX I. – Mobile Emission Reduction Efforts

		POTENTIAL IMPACT ON NEW JERSEY AIR						POTENTIAL IMPACT FROM NEW JERSEY EMITTERS						
Vehicle Emission Standards		UPWIND STATES						DOWNWIND STATES						
Passenger Cars and Light Trucks		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Federal	x	---	---	---	---	x	---	---	---	---	x	---	---
	California	---	x	x	x	x	---	x	x	x	x	---	x	x
	ZEV	---	---	x	---	x	---	x	x	x	x	---	x	x
Heavy Duty Trucks		---	---	---	---	---	---	---	---	---	---	---	---	---
	Federal	x	x	x	---	x	x	---	x	x	---	x	x	x
	California	---	---	---	x	---	---	x	---	x	x	---	---	---
Fuels		UPWIND STATES						DOWNWIND STATES						
Gasoline		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Federal	---	---	---	x	x	x	---	---	---	---	---	---	x
	RFG	x	x	x	x	x	x	x	x	x	soon	x	x	---
	State-Specific Regulation	---	---	---	x	---	---	---	---	---	x	---	---	---
Diesel		---	---	---	---	---	---	---	---	---	---	---	---	---
	Federal	x	x	x	x	x	x	x	x	x	x	x	x	x
	State-Specific Regulation	---	---	---	---	---	---	---	---	---	---	---	---	---
Inspection and Maintenance		UPWIND STATES						DOWNWIND STATES						
Gasoline		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Cars/Light Trucks	x	x	x	x	x	x	x	x	x	x	x	x	x
	Medium Duty Trucks	x	---	x	x	---	x	x	x	x	x	---	---	---
	Heavy Duty Trucks	x	---	x	---	---	x	x	x	---	---	---	---	---
	CARB Aftermarket Converters	---	---	---	---	x	---	---	---	---	soon	---	---	---
Diesel		---	---	---	---	---	---	---	---	---	---	---	---	---
	Cars/Light Trucks	---	x	---	---	x	x	x	x	x	x	x	soon	x
	Medium Duty Trucks	---	---	---	---	x	---	x	x	x	x	---	soon	---
	Heavy Duty Trucks	---	---	x	---	x	---	x	x	x	---	---	soon	---
Idling Limit (Vehicles and Equipment)		UPWIND STATES						DOWNWIND STATES						
		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	On-Road	x	x	x	x	x	x	x	x	x	x	x	x	x
	Sleeper Births	---	---	x	x	x	---	x	x	---	---	---	x	---
	Non-Road	---	---	---	---	---	---	x	x	x	---	---	x	---
	Marine	---	---	---	---	---	---	---	---	x	---	---	---	---
	Rail	---	---	---	---	---	---	---	---	x	---	---	x	---
Ports/Goods Movement		UPWIND STATES						DOWNWIND STATES						
		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Sailing Vessels	---	---	---	---	x	x	x	---	---	---	---	x	---
	Rail	---	---	---	---	x	---	x	---	---	---	---	---	---
	Cargo Handling	---	---	x	---	x	x	x	---	---	---	---	---	---
	Trucks	---	x	x	---	x	x	x	---	---	x	---	---	---
	Airports	---	x	---	---	x	---	---	---	---	---	---	---	---
Construction		UPWIND STATES						DOWNWIND STATES						
		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Clean Contracting	---	---	---	---	---	---	x	---	---	---	---	---	---
Reducing Vehicle Miles Traveled		UPWIND STATES						DOWNWIND STATES						
		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Transportation Demand Management	---	---	x	x	---	x	---	---	---	---	---	x	---
	Transit/Rideshare	---	---	x	x	x	x	x	x	x	x	x	x	x
	Bicycle Paths	---	---	x	x	x	x	x	x	---	x	x	x	x
	Commuter Option Programs	---	---	x	---	---	x	---	---	x	---	x	x	x
On-Road Vehicle Reductions		UPWIND STATES						DOWNWIND STATES						
		DC	DE	MD	PA	NY [†]	VA	NJ	CT	MA	ME	NH	RI	VT
	Alternative Fuels	---	---	x	---	x	x	---	x	---	---	x	x	x
	Advanced Technology Vehicles	---	---	x	---	x	---	x	x	---	x	x	x	x
	Diesel Retrofit	---	---	x	x	x	x	x	x	x	x	x	x	x

[†]Note: New York is both a contributor to NJ ozone levels and a downwind recipient of New Jersey ozone and ozone precursors. According to January 2015 USEPA modeling, NY contributes up to 15% of the ozone levels in New Jersey. Adapted from OTC Mobile Emission Reduction Efforts Report Dated December 1, 2014. An 'x' denotes the existence of a specific control program, whereas a '---' indicates no control program for a specific source and a possible negative impact on New Jersey and other states' air quality.

APPENDIX II. – Letter from the Midwest Ozone Group representative Mr. David Flannery to the New Jersey Clean Air Council

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